Chiron - THE Basketball Training Glove

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Motivation

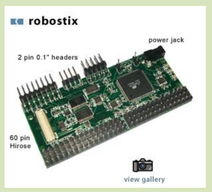
The current automatic coaching system is costly, and only focused on determining the arc of the ball from a fixed position.

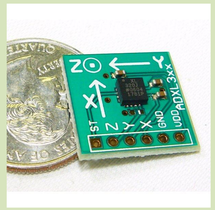
The system that we build will try to reduce the cost for an automated basketball training system, and can measure shots from different positions.

Development Environment

Hardware:

- Gumstix
- Robostix
- 3-axis accelerometer
- LEDs





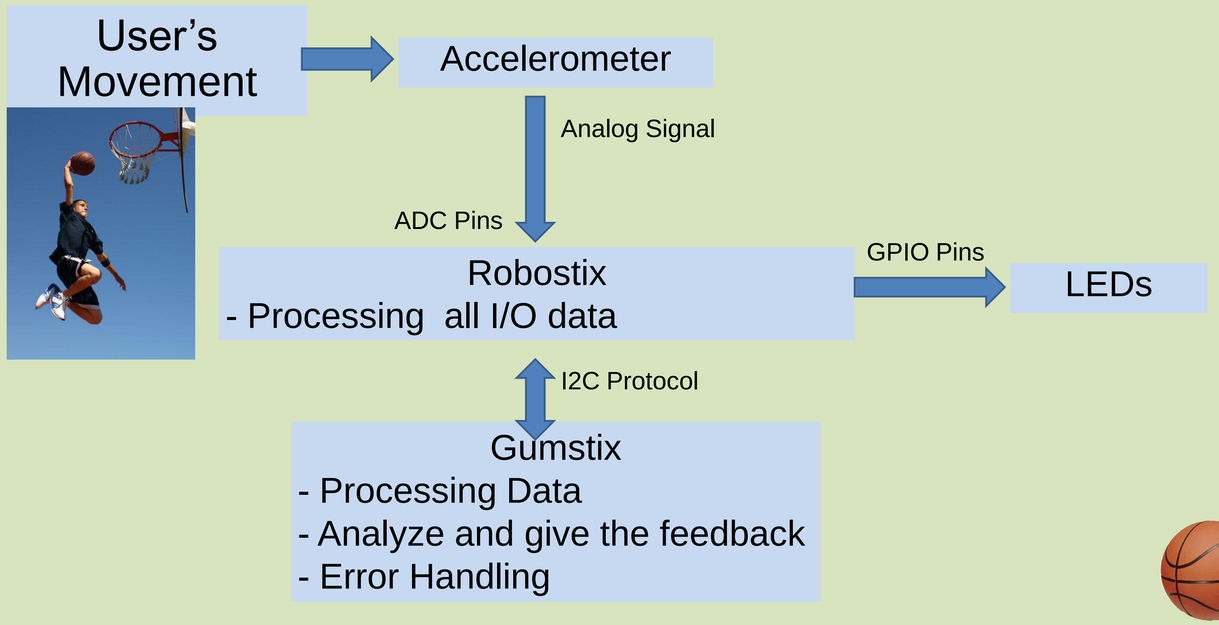
Software:

The software that compute the optimal angle, position, orientation and acceleration of the hand.

Then, give feedback via the LED.

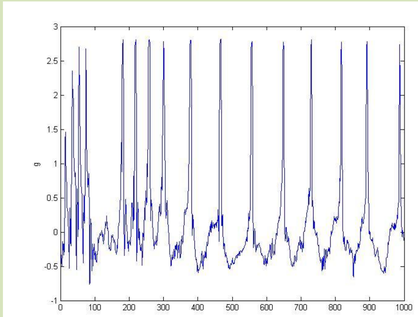
Developed by Chiron Team.

Architecture and Design Concepts

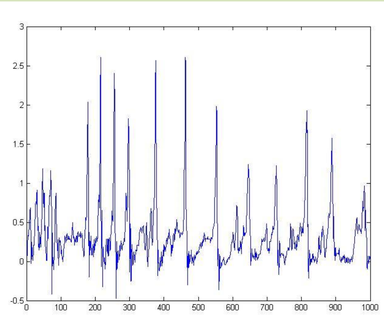


Results

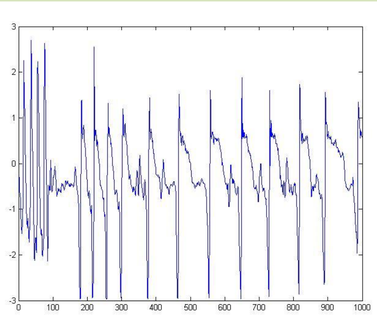
- Given a pre-computed position on the field, the system will detects the user hand's orientation via the accelerometer..
- Gumstix gumstix calculate the angle(x-z axis)/acceleration(y-axis)/position(x-z axis) of the hand when it detects a certain pattern in x,y, and z accelerations . Then it gives a feedback accordingly.
- User power the system off: Gumstix and accelerator halted.
- Upon getting any exceptions in the system: the system will restart itself, .
- The following graphs show the reading from the three axis of the accelerometer. The plot starts with a person doing random hand orientation; then, taking several shots one after another. One units of the x-coordinate represent 20ms in a wall-clock time. The first 2 seconds is when the person is doing random hand orientations. The rest of the graph is consecutive shooting motions using different amount of force applied.



X-axis



Y-axis



Z-axis